

## REMARKS

Applicant appreciates the thorough examination of the application that is reflected in the Office Action dated February 23, 2004. Applicant cancels claims 1-29 without prejudice or disclaimer to the filing of another application to pursue the subject matter of those claims. Applicant adds new claims 30-55. Applicant thanks the Examiner for the courtesies extended during the telephone interview of May 24, 2004. New claims 30-55 are pending in this application. Applicant respectfully requests reconsideration of this application.

### Drawings

Applicant submits herewith replacement sheets of FIGS. 1 and 2. Specifically, a –Prior Art – legend has been added to each of FIGS. 1 and 2. Accordingly, Applicant submits that the objection to the drawings is moot.

Applicant has concurrently filed herewith a Letter to the Official Draftsperson submitting formal drawings to replace the originally filed informal drawings, including corrected drawing informalities indicated on Form PTO-948 attached to the Office Action.

### Art-based Rejections

#### Claims 1-29

The Office rejects claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over applicant's background of the invention in view of Long et al. (U.S. Patent 6,388,583).

Applicant cancels claims 1-29 without prejudice or disclaimer to the filing of another application to pursue the subject matter of those claims. Accordingly, the rejection of claims 1-29 is moot.

#### Claims 30-48

To the extent, the Examiner seeks to reject the new claims 30-55 based on the Applicant's background of the invention in view of Long et al., Applicant respectfully traverse such a rejection for at least the following reasons.

Aspects of the present invention are discussed, for example, at page 18, lines 5-24 of the present application which note that:

Symbol level buffer 504 is used to create a time delay between the data portions and the control information portions of the user's communication signal. In other words, the portion of the user's communication signal that is to be transmitted over the dedicated channel, including spreading factor information, is encoded and transmitted immediately, while the portion of the user's communication signal that is to be transmitted over the shared channel is held in symbol level buffer 504 for a specific amount of time, to create a desired time delay, before being encoded and transmitted. As discussed above, the time delay allows the receiver, such as exemplary system 400 shown in Figure 4, to recover the spreading factor information from the dedicated channel so that de-spreading of data on the shared channel can be performed as the data on the shared channel is received, which results in elimination of the chip level buffer at the receiver. Note that no encoding or spreading of the user's communication signal has been performed prior to storing the user's communication signal information in symbol level buffer 504. As noted above, buffering at the symbol level typically requires on the order of one thousand times less storage space than buffering at the chip level. Thus, in addition to providing the time delay, symbol level buffer 504 also provides more efficient information storage. (Emphasis added.)

Applicant notes that the claims should not be construed as being limited to this embodiment. Claim 30 relates to a method that requires:

storing a first frame in a *buffer that delays transmission of the first frame* on a shared *downlink* channel, wherein the first frame *comprises data information*;

transmitting a second frame on a dedicated *downlink* channel, said second frame comprising at least one slot *comprising control information associated with the first frame* for recovering said first frame; and

*then* transmitting said first frame on the shared downlink channel such that *transmission of said first frame is delayed with respect to transmission of the second frame*. (Emphasis added.)

Applicant submits that the cited references fail to teach or suggest, for example, "*then* transmitting said first frame on the shared downlink channel such that *transmission of said first frame is delayed with respect to transmission of the second frame*," as required by claim 30.

Applicant notes that the APA teaches away from numerous aspects of claim 1 since the APA does not hint at the fact that it is useful to delay transmission of said first frame with respect to transmission of the second frame. Rather, the APA teaches precisely the opposite, and suggests that the respective frames overlap. In discussing the APA at page 7, lines 3-17 of the specification, the Applicant notes that:

Because the control information is transmitted simultaneously with the data information, as discussed above in relation to Figure 1, the data information must be stored at the receiver in its spread form, i.e., as chips, until the control information necessary to de-spread the chips into symbols is received. The de-spreading must be accomplished before further processing can commence for recovering the data in its original form. Thus, according to the techniques described in relation to Figure 1 and Figure 2, there is an inherent processing delay at the receiver. Further, because the data information must be stored at the chip level, i.e., as chips, a relatively large buffer must be used. As noted above, a chip level buffer can typically be 1,000 times larger than a symbol level buffer which stores the same data information. The downlink receiver for WCDMA systems is typically in the terminal unit, which is typically a small portable unit that is constrained to be efficient and to have low power consumption. Thus, extra buffer and processing power requirements for the terminal unit constitute a severe disadvantage. (Emphasis added.)

On the other hand, FIG. 1 of Long shows a block diagram of a mobile station that includes a receive buffer RBUF 5 and a transmitting buffer TBUF 9. As such, FIG. 1 of Long relates to a mobile station which transmits on the uplink channel, as opposed to a downlink channel.

Applicant submits that the Long reference fails to teach or suggest, for example, “*then transmitting said first frame on the shared **downlink** channel such that **transmission of said first frame is delayed with respect to transmission of the second frame**,*” as required by claim 30. Nothing in Long suggests that the transmitting buffer TBUF 9 delays control information CS, DT with respect to the transmitting signals TS. Nothing in Long suggests that control information CS, DT is transmitted prior to corresponding transmitting signals TS. Moreover, nothing in Long suggests that the alignment of data frames and their corresponding frames that include control information should be delayed with respect to each other. Nothing in Long hints about the importance of delay between transmissions of said first frame with respect to transmission of the second frame. In fact, Long does not even suggest that control information CS, DT and transmitting signals TS are formatted in frames, much less that the control information CS, DT comprise “*control information associated with the first frame for recovering*” the transmitting signals TS, as required by claim 30.

In addition, Applicant submits that there is no motivation to modify the APA based on the mobile station taught by Long. The Long reference does not suggest the desirability of

modifying the APA. The Long reference does not suggest that it would be useful to introduce a delay before transmitting the data frame, or that there would be any advantage to sending the corresponding frame of control information prior to sending the corresponding data frame.

For at least the foregoing reasons, Applicant submits that claim 30 is patentable over the cited references. In addition, Applicant respectfully submits that dependent claims 31-43 are separately patentable at least by virtue of their dependency from independent claim 31, and also because those claims recite additional features that are not taught or suggested by the cited references.

For at least the reasons noted above with respect to claim 30, Applicant submits that claim 37 is patentable over the cited references. Moreover, Applicant submits that the neither reference teaches or suggests a **base station** that includes “a **buffer** for storing a first frame to delay transmission of the first frame on a shared downlink channel, wherein the first frame comprises data information,” as required by claim 37. In addition, Applicant respectfully submits that dependent claims 38-43 are separately patentable at least by virtue of their dependency from independent claim 37, and also because those claims recite additional features that are not taught or suggested by the cited references.

For at least the reasons noted above with respect to claims 30 and 37, Applicant submits that claim 44 is also patentable over the cited references. In addition, Applicant respectfully submits that dependent claims 45-48 are separately patentable at least by virtue of their dependency from independent claim 44, and also because those claims recite additional features that are not taught or suggested by the cited references.

**Claims 49-55**

Claim 49 relates to a mobile station, comprising:

an input for receiving a first frame over a shared channel and a second frame over a dedicated channel, wherein the first frame comprises data information, and said second frame comprises at least one slot comprising control information associated with the first frame for recovering said first frame, wherein said first frame is delayed with respect to the second frame such that the second frame is received before receiving said first frame over said shared channel; and means for recovering said first frame using said control information.

Applicant submits that the cited references fail to teach or suggest, for example, "*an input for receiving a first frame over a shared channel and a second frame over a dedicated channel*", wherein the first frame comprises data information, and said second frame comprises at least one slot comprising control information associated with the first frame for recovering said first frame, *wherein said first frame is delayed with respect to the second frame such that the second frame is received before receiving said first frame over said shared channel*," as required by claim 49. The Examiner concedes that the APA does not suggest this feature of claim 49. Applicant submits that nothing in the mobile station shown in FIG. 1 of Long suggests this feature of claim 1. For at least the reasons noted above, Applicant submits that claim 49 is patentable over the cited references. In addition, Applicant respectfully submits that dependent claims 50-55 are separately patentable at least by virtue of their dependency from independent claim 49, and also because those claims recite additional features that are not taught or suggested by the cited references.

#### REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

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By: Erin P. Madill  
Erin P. Madill, Reg. No. 46,893  
(858) 658-2598

QUALCOMM Incorporated  
5775 Morehouse Drive  
San Diego, California 92121  
Telephone: (858) 658-5787  
Facsimile: (858) 658-2502